

PATENT COOPERATION TREATY

PCT

REC'D 06 DEC 1999

WIPO PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

17



Applicant's or agent's file reference PG3361/PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP98/05901	International filing date (day/month/year) 17/09/1998	Priority date (day/month/year) 18/09/1997
International Patent Classification (IPC) or national classification and IPC B01L3/06		
Applicant GLAXO GROUP LIMITED et al.		

- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 4 sheets, including this cover sheet.
 - ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

- This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☒ Certain observations on the international application

Date of submission of the demand 15/04/1999	Date of completion of this report 02.12.99
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Chevallier, F Telephone No. +49 89 2399 8612 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP98/05901

I. Basis of the report

1. This report has been drawn on the basis of *(substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.)*:

Description, pages:

1-5 as originally filed

Claims, No.:

1-12 as originally filed

Drawings, sheets:

1/4-4/4 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP98/05901

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims
	No:	Claims 1-9, 11, 12
Inventive step (IS)	Yes:	Claims
	No:	Claims 6, 7, 10-12
Industrial applicability (IA)	Yes:	Claims 1-12
	No:	Claims

2. Citations and explanations

see separate sheet

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

V. Statement under Art.35(2) PCT.

DE-A-195 43 401 (D1) is novelty destroying for the subject-matters of claims 1 to 5 and 8, 9, 11, 12. Moreover, what is said in lines 62 to 65 of column 2 of D1 may be seen at least as a gas manifold equivalent and it is known to use a condenser unit in such devices. If heating means different from microwaves is used, block (6) of D1 may or must well be made of metal.

US-A-5 529 391 (D2) is novelty destroying for the subject-matters of claims 1 to 4 and 6, 7, 9, 11, 12.

US-A-4 477 192 is novelty destroying for the subject-matters of claims 1 to 4 and 6, 7, 9, 11, 12.

For all documents, see in particular, description of the drawings.

VIII. Observations.

1. Claim 1 could read: "A parallel reaction station comprising a laboratory magnetic stirrer and an adapter block, ... within a magnetic field generated by the laboratory ..." (clarity and support by the description). The relationship block-magnetic stirrer is only clear for an assembly comprising the stirrer.
2. Without any structural relationship between the condenser unit/gas manifold and the rest of the device, claims 6, 10 and 12 do not define clearly a particular embodiment of the invention.
3. "securely fitted" in claim 11 has apparently no counter-part in the description and is of such a general meaning that it cannot differentiate the invention from the cited prior art. In any case, what is said in the last paragraph of page 5 of the application could not differentiate the invention in an inventive way from the cited prior art.

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

United States Patent and Trademark
Office
(Box PCT)
Crystal Plaza 2
Washington, DC 20231
ÉTATS-UNIS D'AMÉRIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 07 June 1999 (07.06.99)	
International application No. PCT/EP98/05901	Applicant's or agent's file reference PG3361/PCT
International filing date (day/month/year) 17 September 1998 (17.09.98)	Priority date (day/month/year) 18 September 1997 (18.09.97)
Applicant LADLOW, Mark et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

15 April 1999 (15.04.99)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer

Nicola Wolff

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

TEBBIT ANTHONY, H.
Barker Brettell
138 Hagley Road
Edgbaston, Birmingham B16 9PW
ROYAUME-UNI

Date of mailing (day/month/year) 10 November 1999 (10.11.99)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference PG3361/PCT	
International application No. PCT/EP98/05901	International filing date (day/month/year) 17 September 1998 (17.09.98)

1. The following indications appeared on record concerning:	
<input checked="" type="checkbox"/> the applicant	<input type="checkbox"/> the inventor <input type="checkbox"/> the agent <input type="checkbox"/> the common representative
Name and Address GLAXO GROUP LIMITED Glaxo Wellcome House Berkeley Avenue Greenford Middlesex UB6 0NN United Kingdom	State of Nationality GB
	State of Residence GB
	Telephone No.
	Facsimile No.
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:	
<input checked="" type="checkbox"/> the person	<input checked="" type="checkbox"/> the name <input checked="" type="checkbox"/> the address <input type="checkbox"/> the nationality <input type="checkbox"/> the residence
Name and Address RADLEYS COMBI-CHEM LIMITED Shire Hill Saffron Walden Essex CB11 3AZ United Kingdom	State of Nationality GB
	State of Residence GB
	Telephone No.
	Facsimile No.
3. Further observations, if necessary:	
4. A copy of this notification has been sent to:	
<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer P. Regis
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

TENT COOPERATION TRE Y

PCT

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

TEBBIT ANTHONY, H.
Barker Brettell
138 Hagley Road
Edgbaston, Birmingham B16 9PW
ROYAUME-UNI

Date of mailing (day/month/year) 10 November 1999 (10.11.99)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference PG3361/PCT	
International application No. PCT/EP98/05901	International filing date (day/month/year) 17 September 1998 (17.09.98)

1. The following indications appeared on record concerning:	
<input type="checkbox"/> the applicant	<input type="checkbox"/> the inventor <input checked="" type="checkbox"/> the agent <input type="checkbox"/> the common representative
Name and Address HAMMER, Catriona, M. Glaxo Wellcome plc Glaxo Wellcome House Berkeley Avenue Greenford Middlesex UB6 0NN United Kingdom	State of Nationality
	State of Residence
	Telephone No. 0171 493 4060
	Facsimile No. 0181 966 8838
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:	
<input checked="" type="checkbox"/> the person	<input checked="" type="checkbox"/> the name <input checked="" type="checkbox"/> the address <input type="checkbox"/> the nationality <input type="checkbox"/> the residence
Name and Address TEBBIT ANTHONY, H. Barker Brettell 138 Hagley Road Edgbaston, Birmingham B16 9PW United Kingdom	State of Nationality
	State of Residence
	Telephone No.
	Facsimile No.
3. Further observations, if necessary:	
4. A copy of this notification has been sent to:	
<input checked="" type="checkbox"/> the receiving Office	<input type="checkbox"/> the designated Offices concerned
<input type="checkbox"/> the International Searching Authority	<input checked="" type="checkbox"/> the elected Offices concerned
<input checked="" type="checkbox"/> the International Preliminary Examining Authority	<input type="checkbox"/> other:

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer P. Regis Telephone No.: (41-22) 338.83.38
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PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT
(PCT Rule 71.1)

To:

HAMMER, Catriona MacLeod
Glaxo Wellcome plc
Glaxo Wellcome House
Berkeley Avenue
Greenford
Middlesex UB6 0NN
GRANDE BRETAGNEDate of mailing
(day/month/year)

02.12.99

Applicant's or agent's file reference
PG3361/PCT

IMPORTANT NOTIFICATION

International application No.
PCT/EP98/05901International filing date (day/month/year)
17/09/1998Priority date (day/month/year)
18/09/1997

Applicant

GLAXO GROUP LIMITED et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized officer

Ipinazar, P

Tel. +49 89 2399-8131



PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PG3361/PCT	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/EP 98/ 05901	International filing date (day/month/year) 17/09/1998	(Earliest) Priority Date (day/month/year) 18/09/1997
Applicant GLAXO GROUP LIMITED et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. ☐ Certain claims were found unsearchable (see Box I).

2. ☐ Unity of invention is lacking (see Box II).

3. ☐ The international application contains disclosure of a **nucleotide and/or amino acid sequence listing** and the international search was carried out on the basis of the sequence listing

☐ filed with the international application.

☐ furnished by the applicant separately from the international application,

☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.

☐ Transcribed by this Authority

4. With regard to the **title**, ☐ the text is approved as submitted by the applicant

☒ the text has been established by this Authority to read as follows:

PARALLEL REACTION STATION WITH MAGNETIC STIRRING

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this International Search Report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is:

Figure No. 1 ☐ as suggested by the applicant.

☐ None of the figures.

☒ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

INTERNATIONAL SEARCH REPORT

National Application No

PCT/EP 98/05901

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 B01L3/06 //B01F13/08, B01F15/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G01N B01F B01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 195 43 401 A (MIKROWELLEN SYSTEME MWS GMBH) 22 May 1997	1-5, 8, 9
A	see column 2, line 33 - column 5, line 64	11
A	see column 7, line 14 - column 7, line 30 see figures 1, 2	7, 10, 12

X	US 5 529 391 A (KINDMAN L ALLEN ET AL) 25 June 1996	1-4, 6, 7, 9
A	see column 2, line 4 - column 2, line 32 see column 3, line 16 - column 4, line 31 see figures 1-5	11

X	US 4 477 192 A (BONNEY WARREN J) 16 October 1984	1-4, 6
A	see column 2, line 59 - column 3, line 11 see column 3, line 33 - column 4, line 32 see figures 1-5	12

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☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

2 February 1999

Date of mailing of the international search report

09/02/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Koch, A

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 98/05901

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 97 09353 A (PATHOGENESIS CORP ;BAKER WILLIAM R (US); HARNESS JAMES R (US); TOW) 13 March 1997 see page 3, line 7 - page 3, line 28 see page 7, line 13 - page 9, line 8 see page 11, line 9 - page 11, line 23 see figures 1,2 -----	1,4,6,7, 9,10,12
A	US 4 925 629 A (SCHRAMM WILLFRIED) 15 May 1990 see column 3, line 4 - column 3, line 9 see column 3, line 42 - column 4, line 27 see column 4, line 45 - column 5, line 27 see figures 1,2 -----	1-4,9

INTERNATIONAL SEARCH REPORT

ation on patent family members

International Application No

PCT/EP 98/05901

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
DE 19543401	A	22-05-1997	NONE		
US 5529391	A	25-06-1996	NONE		
US 4477192	A	16-10-1984	NONE		
WO 9709353	A	13-03-1997	AU	6916396 A	27-03-1997
			CA	2231170 A	13-03-1997
			EP	0848721 A	24-06-1998
			US	5716584 A	10-02-1998
US 4925629	A	15-05-1990	NONE		

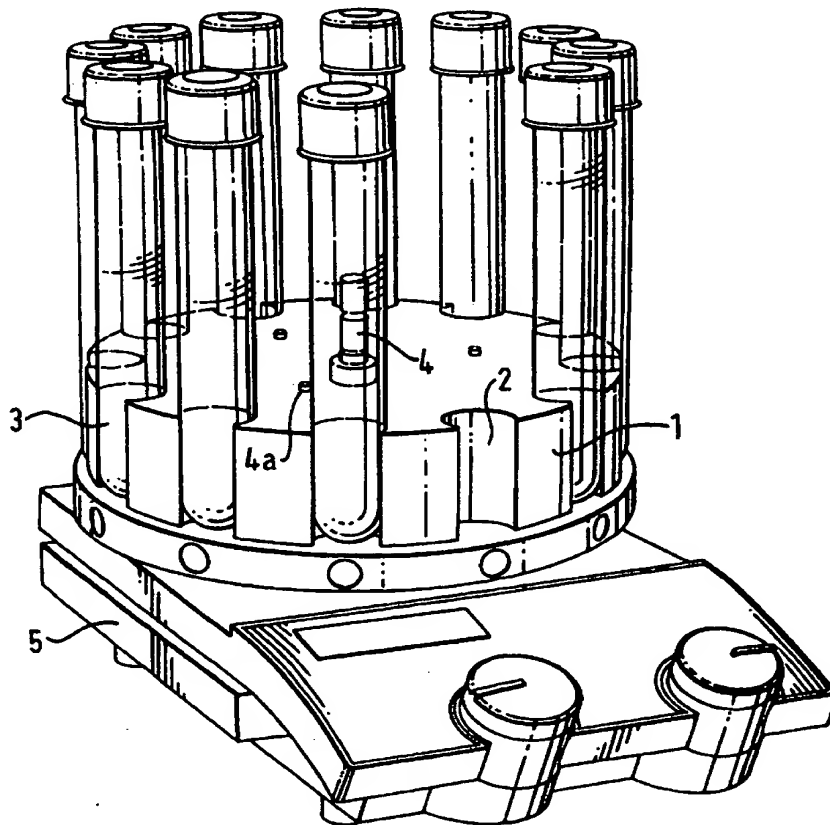
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : B01L 3/06 // B01F 13/08, 15/06		A1	(11) International Publication Number: WO 99/13988
			(43) International Publication Date: 25 March 1999 (25.03.99)
(21) International Application Number: PCT/EP98/05901			(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).
(22) International Filing Date: 17 September 1998 (17.09.98)			
(30) Priority Data: 9719774.3 18 September 1997 (18.09.97) GB			
(71) Applicant (for all designated States except US): GLAXO GROUP LIMITED [GB/GB]; Glaxo Wellcome House, Berkeley Avenue, Greenford, Middlesex UB6 0NN (GB).			
(72) Inventors; and (75) Inventors/Applicants (for US only): LADLOW, Mark [GB/GB]; Glaxo Wellcome plc, University Chemical Laboratory, Lensfield Road, Cambridge CB2 1EW (GB). MITCHELL, Adrian, Walter [GB/GB]; Glaxo Wellcome plc, Park Road, Ware, Herts SG12 0DP (GB).			
(74) Agent: HAMMER, Catriona, M.; Glaxo Wellcome plc, Glaxo Wellcome House, Berkeley Avenue, Greenford, Middlesex UB6 0NN (GB).			Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>

(54) Title: PARALLEL REACTION STATION WITH MAGNETIC STIRRING

(57) Abstract

The present invention relates to a reaction station for performing parallel synthesis. Particularly, the device is capable of accommodating a plurality of reaction vessels being specifically adapted so that when placed in a magnetic field, such as that generated by a laboratory magnetic stirrer, any reaction vessel accommodated by the device is in an effective position for stirring with respect to the magnetic field.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
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CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

INTERNATIONAL SEARCH REPORT

In: International Application No
PCT/EP 98/05901

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B01L3/06 //B01F13/08, B01F15/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G01N B01F B01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 195 43 401 A (MIKROWELLEN SYSTEME MWS GMBH) 22 May 1997	1-5, 8, 9
A	see column 2, line 33 - column 5, line 64	11
A	see column 7, line 14 - column 7, line 30	7, 10, 12
	see figures 1, 2	

X	US 5 529 391 A (KINDMAN L ALLEN ET AL) 25 June 1996	1-4, 6, 7, 9
	see column 2, line 4 - column 2, line 32	
A	see column 3, line 16 - column 4, line 31	11
	see figures 1-5	

X	US 4 477 192 A (BONNEY WARREN J) 16 October 1984	1-4, 6
A	see column 2, line 59 - column 3, line 11	12
	see column 3, line 33 - column 4, line 32	
	see figures 1-5	

	-/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

2 February 1999

Date of mailing of the international search report

09/02/1999

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,

Authorized officer

Koch, A

INTERNATIONAL SEARCH REPORT

In International Application No

PCT/EP 98/05901

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. Application No

PCT/EP 98/05901

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 19543401	A	22-05-1997	NONE	
US 5529391	A	25-06-1996	NONE	
US 4477192	A	16-10-1984	NONE	
WO 9709353	A	13-03-1997	AU 6916396 A	27-03-1997
			CA 2231170 A	13-03-1997
			EP 0848721 A	24-06-1998
			US 5716584 A	10-02-1998
US 4925629	A	15-05-1990	NONE	

4/PMB

09/509147

430 Rec'd PCT/PTO
PCT/EP98/05901

17 MAR 2000

WO 99/13988

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PARALLEL REACTION STATION WITH MAGNETIC STIRRING

5 The present invention relates to a device capable of accommodating a plurality of reaction vessels being specifically adapted so that when placed in a magnetic field, such as that generated by a laboratory magnetic stirrer, any reaction vessel accommodated by the device is in an effective position for stirring with respect to the magnetic field.

10 In the field of organic chemistry it is often desirable to perform a variety of related chemical reactions simultaneously under similar reacting conditions. The technique for performing such reactions simultaneously is known as parallel synthesis.

15 One of the problems associated with carrying out parallel syntheses in the laboratory is that the majority of existing laboratory magnetic stirrers are only designed to accommodate and efficiently stir the contents of one reaction vessel at any one time. Accordingly, such equipment is not suitable for use in parallel synthesis.

20 Laboratory magnetic stirrers specifically designed for use in parallel synthesis are known. However, such apparatus, conventionally known as parallel reaction stations are only available as complete units incorporating a source of magnetic flux together with a frame for accommodating reaction vessels. These units are very costly in comparison to laboratory magnetic stirrers. The present device is
25 advantageous over known devices in that it allows a conventional magnetic stirrer to be used for parallel synthesis and hence provides significant economic advantages compared with parallel reaction stations.

30 A means has now been found which permits the use of existing laboratory magnetic stirrers in parallel syntheses by providing a device which is capable of securely accommodating a plurality of reaction vessels said device being specifically adapted so that when correctly located within a magnetic field generated by a laboratory magnetic stirrer each and every reaction vessel is effectively positioned for stirring with respect to the magnetic field. Thereby, any

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reaction vessel, placed in the device and equipped with a magnetic stir bar, is subject to smooth and efficient agitation.

Thus, the present invention provides a device comprising an adapter block, the adapter block containing fixing means for holding a plurality of reaction vessels, wherein when the adapter block is co-operatively positioned within a magnetic field generated by a laboratory magnetic stirrer each and every position for holding a reaction vessel is effectively located for stirring with respect to the magnetic field. Preferably, the fixing means will comprise a plurality of sockets each designed to securely accommodate a reaction vessel.

Optionally the device may incorporate guide means which engage with the laboratory magnetic stirrer thereby ensuring the adapter block is correctly located within the magnetic field of the laboratory magnetic stirrer such that each and every position for holding a reaction vessel is effectively located for stirring with respect to the magnetic field. Suitably the guide means will ensure the adapter block is effectively positioned such that each and every position for holding a reaction vessel is effectively located for equivalent stirring with respect to the magnetic field. Preferably, the guide means comprises a raised rim around a central recess.

The adapter block may be cast in any suitable form, however in a particularly preferred arrangement the adapter block is circular in shape. The adapter block may be used in co-operation with any laboratory magnetic stirrer with a suitable circular magnetic/hotplate. Preferred laboratory stirrers include the IKA RCT basic hotplate stirrers, the IKAMAG REO, the Heidolph MR3001, the Heidolph MR3002, and the Heidolph MR3000.

The sockets for securely accommodating the reaction vessels may be located at any position on the device in which they are effectively positioned for stirring with respect to the magnetic field. In a particularly preferred arrangement the sockets are arranged about the perimeter of the adapter block.

Preferably the adapter block is made of chemically resistant material for example PTFE or a metal such as aluminium or stainless steel.

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5 The adapter block may optionally be constructed from heat conducting material for example aluminium or stainless steel. Thereby, when the device is used in co-operation with a hotplate/magnetic stirrer heat generated by the hotplate will be efficiently transferred to the reaction vessels accommodated by the device.

10 Preferably the adapter block or condenser unit will incorporate a gas manifold. Thereby, gas flow or vacuum supply to each of the reaction vessels may be individually controlled. The gas manifold may be located anywhere on the device, however in a particularly preferred arrangement the gas manifold is located at the centre of the parallel reaction station.

15 The adapter block is capable of being constructed to accommodate any size laboratory reaction vessel however 16 and 24 mm o.d. test tubes are particularly preferred.

20 Optionally the device may incorporate a condenser unit such that the contents of the reaction vessels may be heated to reflux. Suitably, the condenser unit will be assembled such that the unit is in direct contact with the reaction vessels as they project from the adapter block. Preferably the condenser unit will be constructed from a material of high specific heat capacity for example stainless steel. In a particularly preferred embodiment the unit is condenser liquid cooled.

25 Preferred embodiments of the invention are described in detail below, by example only, with reference to the accompanying drawings, wherein:

Figure 1 is a perspective view of the adapter block working in co-operation with a laboratory magnetic stirrer.

30 Figure 2 is a plan view of the adapter block.

Figure 3 is a cross-section of the adapter block.

35 Figure 4 is a perspective view of the adapter block together with a condenser unit working in co-operation with a laboratory magnetic stirrer.

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Figure 5 is a plan view of the condenser unit.

Figure 6 is a cross-section of the condenser unit along line A.

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The device illustrated in Figure 1 comprises the adapter block (1) which is constructed from PTFE and is circular in shape with sockets (2) suitable for securely accommodating the test tube reaction vessels (3) located about the perimeter of the device. One face of the device is equipped with a central recess whereby the stirrer plate of the magnetic stirrer (5) is secured within the recess thereby ensuring that the device is effectively located for stirring within the magnetic field. A gas manifold comprising a gas inlet (4) and gas outlets (4a) is located at the centre of the adapter block.

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Figures 2 and 3 show the location of the gas inlet (4) and gas outlets (4a) more clearly. Figure 3 illustrates the central recess (5a) formed by the raised rim (5b) which ensure the adapter block is correctly located within the magnetic field of the laboratory stirrer.

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The device shown in Figure 3 comprises an adapter block (11) and a condenser unit (12) both of which are constructed from aluminium and are circular in shape. The adapter block comprises sockets (13) located about the perimeter of the device suitable for accommodating the test tube reaction vessels (14). The condenser unit contains openings (15) through which the test tube reaction vessels pass. The condenser unit is equipped with inlet/outlets (18) which permit cooling fluid to flow through the condenser unit. The adapter block and condenser unit are substantially parallel to one another. One face of the adapter block is equipped with a recess whereby the hotplate of a hotplate/magnetic stirrer (16) may be secured within the recess thereby ensuring that the adapter block is effectively located within the magnetic field. A gas manifold comprising a gas inlet (17) and gas outlets (17a) is located at the centre of the condenser unit.

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Figures 5 and 6 illustrate more clearly the cooling fluid inlet/outlets (18) the openings through the reaction vessels pass (15) and the gas inlet (17) and the gas outlets (17a).

- 5 In an additional embodiment of the invention the device comprises an adapter block as described hereinbefore wherein the device is permanently fixed to a laboratory magnetic or hotplate magnetic stirrer.

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CLAIMS

1. A device comprising an adapter block, the adapter block containing fixing means for holding a plurality of reaction vessels, wherein when the adapter block is co-operatively positioned within a magnetic field generated by a laboratory magnetic stirrer each and every position for holding a reaction vessel is effectively located for stirring with respect to the magnetic field.
2. A device according to claim 1 wherein the adapter block incorporates guide means to ensure that the device is effectively positioned with respect to the laboratory magnetic stirrer's magnetic field.
3. A device according to claim 2 wherein the adapter block incorporates guide means to ensure that each and every position for holding a reaction vessel is effectively located for equivalent stirring.
4. A device according to any of claims 1 to 3 wherein the fixing means comprise a plurality of sockets each designed to securely accommodate a reaction vessel.
5. A device according to claim 4 wherein the sockets are arranged about the perimeter of the adapter block.
6. A device according to any of claims 1 to 5 wherein the device incorporates a condenser unit.
7. A device according to claim 6 wherein the adapter block is made of heat conducting material.
8. A device according to any preceding claim wherein the adapter block is circular in shape.
9. A device according to any preceding claim wherein the adapter block is made of chemically resistant material.

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10. A device according to any preceding claim wherein the adapter block incorporates a gas manifold.
- 5 11. A magnetic or hotplate magnetic stirrer securely fitted with an adapter block wherein the adapter block contains fixing means for holding a plurality of reaction vessels, and wherein the adapter block is positioned within the magnetic field generated by the laboratory hotplate magnetic stirrer such that each and every socket is effectively positioned for stirring with respect to the magnetic field.
- 10 12. A magnetic or hotplate magnetic stirrer according to claim 11 wherein the device incorporates a condenser unit.

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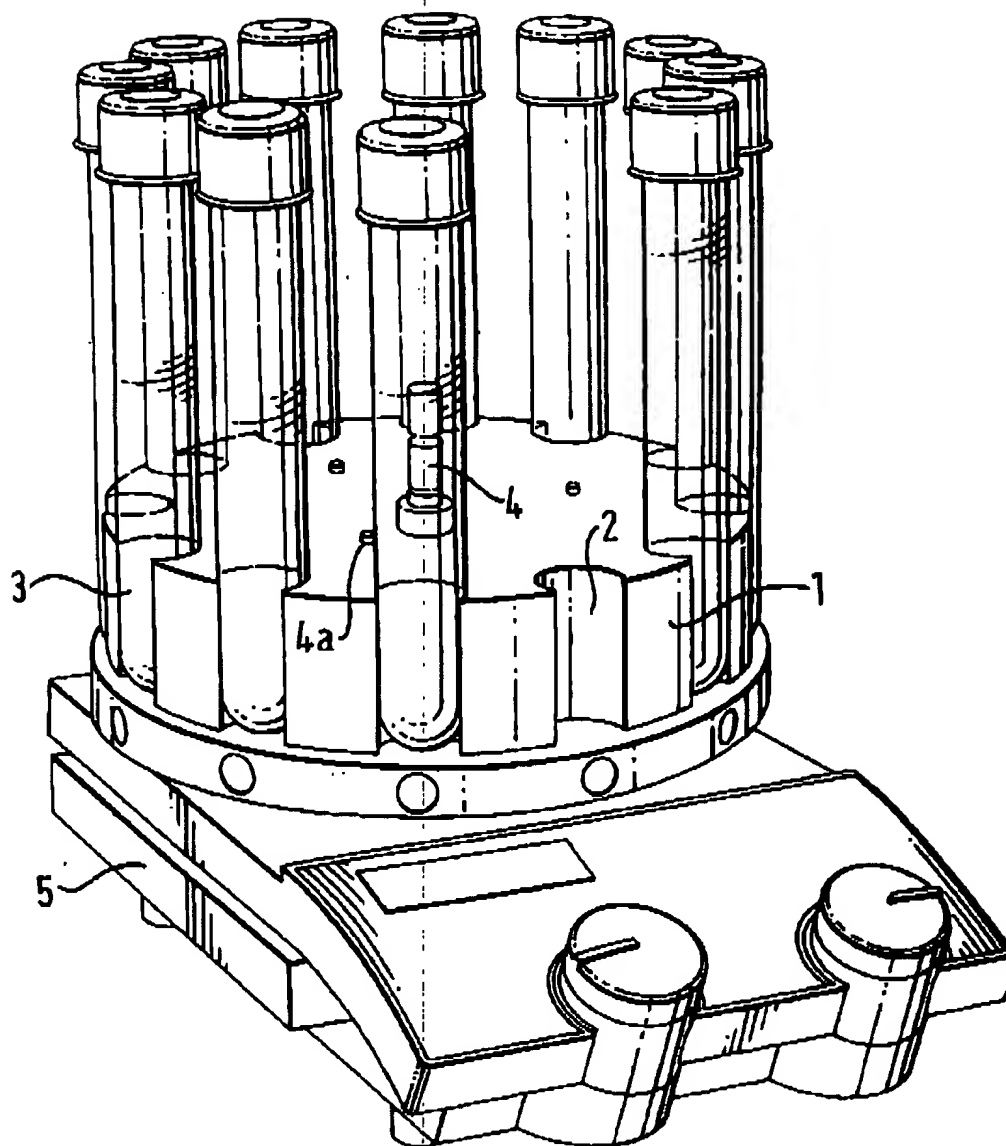


FIG. 1

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FIG. 2

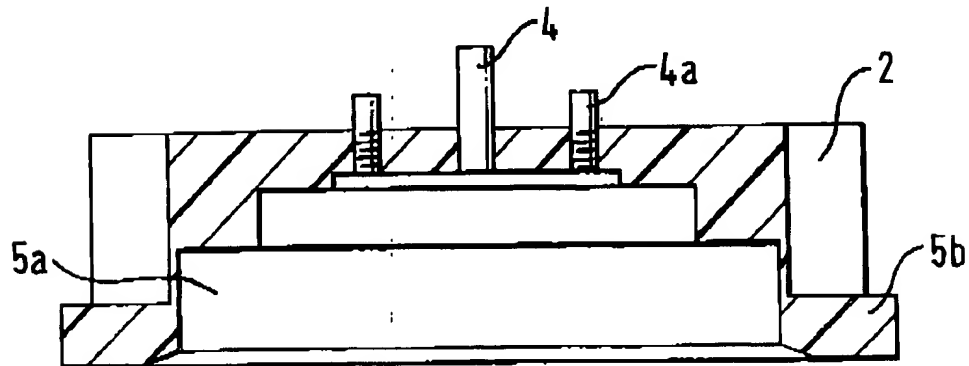
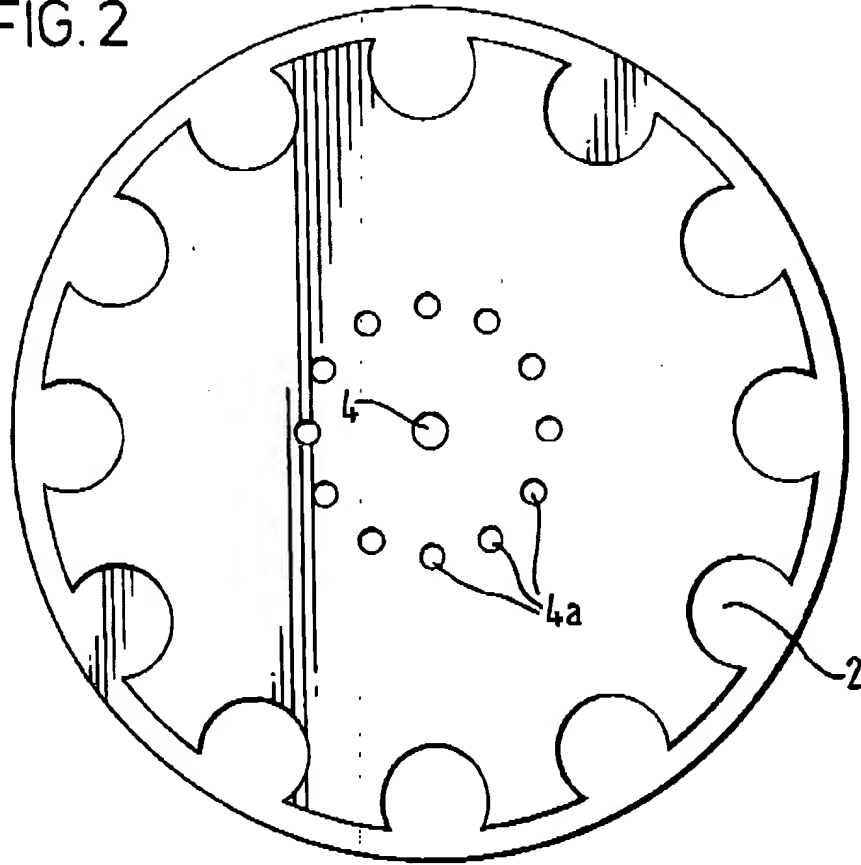


FIG. 3

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FIG. 4

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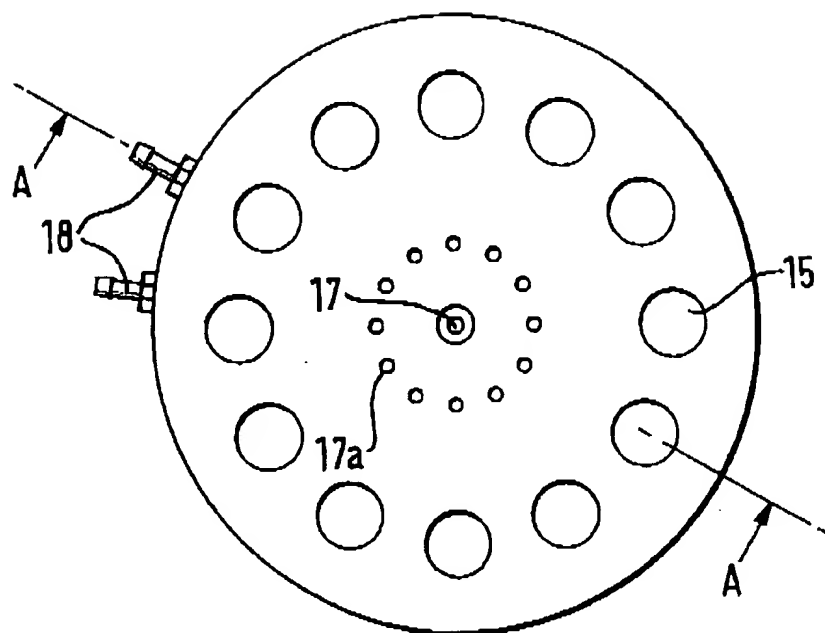


FIG. 5

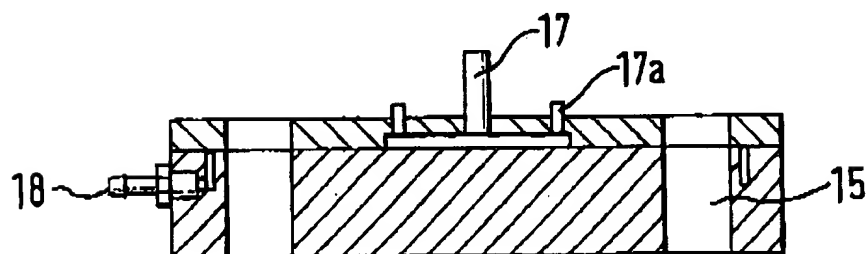


FIG. 6

INTERNATIONAL SEARCH REPORT

International Application No.
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A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 B01L3/06 //B01F13/08, B01F15/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 G01N B01F B01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 195 43 401 A (MIKROWELLEN SYSTEME MWS GMBH) 22 May 1997	1-5, 8, 9
A	see column 2, line 33 - column 5, line 64	11
A	see column 7, line 14 - column 7, line 30 see figures 1, 2	7, 10, 12
X	US 5 529 391 A (KINDMAN L ALLEN ET AL) 25 June 1996	1-4, 6, 7, 9
A	see column 2, line 4 - column 2, line 32 see column 3, line 16 - column 4, line 31 see figures 1-5	11
X	US 4 477 192 A (BONNEY WARREN J) 16 October 1984	1-4, 6
A	see column 2, line 59 - column 3, line 11 see column 3, line 33 - column 4, line 32 see figures 1-5	12
-/-		

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"Z" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

In International Application No.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 97 09353 A (PATHOGENESIS CORP ;BAKER WILLIAM R (US); HARNESS JAMES R (US); TOW) 13 March 1997 see page 3, line 7 - page 3, line 28 see page 7, line 13 - page 9, line 8 see page 11, line 9 - page 11, line 23 see figures 1,2	1,4,6,7, 9,10,12
A	US 4 925 629 A (SCHRAMM WILLFRIED) 15 May 1990 see column 3, line 4 - column 3, line 9 see column 3, line 42 - column 4, line 27 see column 4, line 45 - column 5, line 27 see figures 1,2	1-4,9

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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US 5529391	A	25-06-1996	NONE	
US 4477192	A	16-10-1984	NONE	
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